

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Rui Lang, et al

Serial No.: 10/646,851 Confirm: 1500

Filed: Aug. 22, 2003

For: Multi-Protocol Sharable Virtual Storage
Objects Management and Control

Technology Center: 2100

Group Art Unit: 2154

Examiner: Michael E. Keefer

Atty. Dkt. No.: 10830.0097NP

REPLY BRIEF

TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer dated Aug. 4, 2008, and is intended to address only new points of argument raised in the Examiner's Answer.

With respect to claims 27, 30, and 24-26, pages 19 to 20 of the Examiner's Answer raise a new issue of the proper interpretation of the last paragraph of appellants' claim 27. The last paragraph of appellants' claim 27 says: "wherein the attributes of the virtual direct access storage device include a specification of an internal organization of the virtual direct access storage device for mapping of the data of the virtual direct access storage device from the single file to the data storage, and the specification of the internal organization of the virtual direct access storage device is stored in the single file." Page 19 of the Examiner's Answer construes this language to mean that the file "contains

information relative to mapping the data in the virtual disk to the data structure” and points to “metadata section 522 that includes a type field 524 and an xinode field that reference another on-disk inode structure”. The Examiner’s Answer further argues in the alternative that the appellants’ claim language is “intended use language describing how the internal organization is to be used, not describing or limiting the type or kind of information that is stored within the single file.” (Emphasis in the original.)

In reply, appellants respectfully point out that during examination, the Examiner construed the language in the last paragraph of appellants’ claim 27 to mean “an internal organization ... showing where particular data is actually stored on a physical device” because with respect to the last paragraph of appellants’ claim 27, page 4 of the final Official Action said “wherein the attributes define an internal organization of the virtual direct access storage device and those attributes are stored in the single file. (FIG. 5 of fully incorporated application 10/216453 (now US 7107385) shows that the metadata does give an internal organization of the VLUN, showing where particular data is actually stored on a physical device.)” (Emphasis added.) Page 19 of the Examiner’s Answer now says “information relative to the mapping of the data so that it can be retrieved from the actual storage device,” which is different from “showing where particular data is actually stored on a physical device.”

Appellants respectfully point out that in the metadata section 522, neither the type field 524 nor the xinode field 525 specifies an internal organization of the virtual direct access storage device for mapping of the data of the virtual direct access storage device from the single file to the data storage. As described in col. 13, lines 14-30 of Rajan et al. U.S. 7,107,385:

In order to access the stream_dir inode 520, the pointer of xinode field 515 in lun inode 510 is modified to reference that inode. The stream_dir inode 520 comprises a metadata section 522 that includes a type (stream_dir) field 524 and an xinode field 525 that references another on-disk inode structure containing, e.g., access control (such as CIFS permission) information associated with the vdisk. The inode 520 also includes a data section 526 containing a pointer 528 that references a stream directory data block associated with the vdisk, such as stream directory block 530. The stream directory block 530 comprises a data section 532 that includes a plurality of entries, each containing an external representation of a stream inode along with mapping information (i.e., the inode number) for that inode. One of those entries, entry 534, contains mapping information (e.g., a pointer) that references an attributes (stream) inode 540.

The internal organization of the virtual direct access storage device is different from the connection of the virtual direct access storage device to the client. The internal

organization of the virtual direct access storage device is also different from access controls for the virtual storage device. In neither case is there internal organization specified for mapping the data of the direct access storage device from the single file to the data storage. In Rajan et al. U.S. 7,107,385, the mapping to the data storage disks 130 in FIG. 1 is performed by configuration of the logical volumes 150 (VOL 1 and VOL 2) in FIG. 2, and not by the vdisk file inode structure of FIG. 5.

In reply to the alternative argument that that the appellants' claim language is "intended use" language, appellants respectfully point out that the "specification of an internal organization of the virtual direct access storage device" is an element in the claimed combination of appellant's apparatus claim 27 defining a network file server, and the language "for mapping of the data of the virtual direct access storage device from the single file to the data storage" recites the function of the "specification of an internal organization of the virtual direct access storage device." There is clear legal authority that claimed programming of a data processing machine is a structural element that cannot be ignored, and there is clear legal authority that specification of a function of an element in a claimed combination cannot be ignored.

When determining whether a claim is obvious, an examiner must make "a searching comparison of the claimed invention - including all its limitations - with the teaching of the prior art." In re Ochiai, 71 F.3d 1565, 1572 (Fed. Cir. 1995). "While not

an absolute rule, all claim terms are presumed to have meaning in a claim.” Innova/Pure Water v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1119 (Fed. Cir. 2004)(defendant’s claim construction impermissibly read the term “operatively” out of the phrase “operatively connected”).

In In re Land, 368 F.2d 866, 151 U.S.P.Q. 621 (C.C.P.A. 1966), the court noted that a claim 70 to a photographic unit recited that “said color-providing substances associated with at least the inner photosensitive emulsion layers are *adapted to be rendered diffusible* in said liquid composition *only after* at least substantial development of the next outermost photosensitive ... layer has occurred.” The court noted that the italicized portions were functional and held the claim patentable over the prior art in view of the functional recitations. The court said: “It is true that the italicized portions are ‘functional’ but we do not regard that as good ground to give them ‘no weight’ in view of the third [now sixth] paragraph of 35 U.S.C. § 112. We give them weight and with this limitation we think claims 70 and 71 are limited to deferred diffusion *built into the structure recited*, thereby being limited to the actual invention disclosed and hence allowable for the same reasons given by the board” Id., 151 U.S.P.Q. at 635-636 (emphasis in the original).

In In re Bernhart, 417 F.2d 1395, 1399-1400, 163 U.S.P.Q. 611, 615-16 (C.C.P.A. 1969), the examiner indicated that the novelty in applicants' claims lay in the equations

with which the computer was programmed, and argued that this is not a structural difference over the prior art. The court disagreed, and held: “[I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged.” The Federal Circuit has expressly adopted this holding of Bernhart. “A general purpose computer, or microprocessor, programmed to carry out an algorithm creates ‘a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.’” WMS Gaming, Inc., v. International Game Technology, 184 F.3d 1339, 1348 (Fed. Cir. 1999)(citations omitted)

In In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971), the court held that the functional recitation “transparent to infrared rays” was not indefinite under 35 U.S.C. 112, second paragraph. Instead of saying that the functional recitation should be disregarded, the court said: “We take the characterization “functional”, as used by the Patent Office and argued by the parties, to indicate nothing more than the fact that an attempt is being made to define something (in this case, a composition) by what it does rather than by what it is (as evidenced by specific structure or material, for example). In our view, there is nothing intrinsically wrong with the use of such a technique in drafting patent claims. Indeed we have even recognized in the past the practical necessity for the use of functional language.”

In In re Mills, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990), the court considered a claim 6 to “Apparatus for producing an aerated cementitious composition, comprising ... drive motor means connected through gearbox means providing a pumping capacity of the pump means greater than the feed rate of the ingredients to the mixing chamber provided by the feed means, such that in operation air is drawn into the mixing chamber, and entrained in the mixed ingredients.” The Board had affirmed the Examiner’s rejection of claim 6 as obvious on the ground that the differences between the claim and the cited references lay “solely in the functional language of the claim.” On appeal, the Federal Circuit reversed. The Federal Circuit acknowledged that the difference between the claim and the prior art lay specifically in the functional limitations of the pump means and the feed means, yet the Federal Circuit held that the claim was nonobvious over the prior art based on these functional limitations. Id., 16 U.S.P.Q.2d at 1432.

In general, any recited function of an element in a claimed combination could be characterized as “an intended use,” yet disregard of any recited function of an element in a claimed combination would be in derogation of 35 U.S.C. 112, paragraph 6. Nor does the “broadest reasonable interpretation” permit 35 U.S.C. 112, paragraph 6, to be disregarded during examination. In re Donaldson 16 F.3d 1189, 1194, 29 U.S.P.Q. 2d

1845, 1850 (Fed. Cir. 1994); In re Bond, 910 F.2d 831,833, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990).

With reference to claims 8-11 and 20-23, pages 20 to 21 of the Examiner's Answer raise a new point of argument with respect to new evidence attached to the Examiner's Answer. This new evidence is the "IANA. 'Port Numbers'" reference and the "PCMAG.COM" reference cited on the "Notice of References Cited" that is part of Paper No. 20080729. Page 21 of the Examiner's Answer says: "This is further evidenced by two definitional references included with the Appeal Brief." However, these references were not included with the Appeal Brief, and instead were included with the Examiner's Answer. These two "definitional references" have not been located earlier in the file wrapper for the present application.

Appellants respectfully submit that the two new "definitional references" are not relevant to the issue of obviousness. Appellants' claims 8-11 and 20-23 are not reciting a combination of an SQL based management system with an iSCSI service. Moreover, the two "definitional references" are not inconsistent with an alternative combination in which a command would have been included in the block level access protocol for initiating replication of the snapshot copy of the storage object, and thus fall outside of the scope of appellants' claims 8-11 and 20-23. Upon considering initiation of replication of an iSCSI LUN by a network client owner of the iSCSI LUN to be a

function of the iSCSI LUN service of the first file server, the two new “definitional references” would teach away from the network client using a first TCP/IP connection with the first file server to access the storage object using the iSCSI block level access protocol, and using a second TCP/IP connection with the first file server to initiate replication of the iSCSI LUN.

Appellants also respectfully submit that the Examiners’ Answer is arguing inherency with respect to a hypothetical proposed combination. There is nothing that necessarily requires one of ordinary skill to pick and choose the particular elements from Lefebvre and Chen as proposed in the Examiners’ Answer for re-combination as required in order to reconstruct the appellants’ claimed invention.

With respect to claims 7 and 19, page 22 of the Examiners’ Answer raises a new point of argument that “Chen, via fully incorporated reference Hitz (US 5,819,292) in Col. 1 lines 26-32 discloses backups occur on servers with ‘active file systems’, meaning that writing and reading can be simultaneous with copying. Therefore, the connection suggested by Lefebvre to request a backup may happen concurrently with other uses accessing the file system.”

In reply, appellants respectfully submit that in the context of appellants’ claims 7 and 19, the initiation of replication by a client via a second TCP I/P connection is

different from the replication of the snapshot copy from the first file server to the second file server. Thus, the fact that a backup could occur on a server with an “active file system” may be relevant to an issue of whether or not the claimed replication of the snapshot copy of the file from the first file server to the second file server could be concurrent with the client’s access to the storage object in the first file server. But this issue is not relevant to appellants’ claims 7 and 19. In the appellants’ claims 7 and 19, the clients’ initiation of the replication (over a second TCP connection between the client and the first file server) is different from the replication of the snapshot copy of the file from the first file server over the network to the second file server.

With respect to claims 28 and 29, pages 22 to 23 of the Examiners’ Answer raise a new point of argument that in Hashemi (US 6,934,804), “it would be imperative that each virtual disk would have recorded upon it what slices it was to be accessing so as to prevent it from accessing a disk area not assigned to it.” However, such configuration information could be stored elsewhere. As taught in Chen and Rajan, for example, a virtual disk file can be built on a logical volume, and the configuration information for the logical volume, which maps to the disk storage, can be stored elsewhere.

Hashemi col. 5 lines 65-67 say: “The array controller 290 is also responsible for maintaining mapping between each of the virtual devices and the individual disk drives in the array.” Figure 1 shows the array controller 290. Hashemi col. 4 discloses that the

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non-volatile memory 103 of the array controller is “e.g., read only memory (ROM), programmable RAM, flash memory, EPROM, EEPROM, etc. ...” Thus, the non-volatile memory 103 of the array controller could be programmed with the mapping between each of the virtual devices and the individual disk drives in the array, so as to prevent a virtual disk from accessing a disk area not assigned to it, in accordance with the explicit teachings of Hashemi. However, it would also be possible to store this configuration information in the disk array apart from the virtual disks. For example, the configuration information could be replicated on the first sector of each physical disk in the array.

In view of the above, the rejections of the claims should be reversed.

Respectfully submitted,

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